EX PARTE OR LATE FILED

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Federal Communications Commission
Office of Secretary

October 9, 1996

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N.W. Room 222
Washington, D.C. 20554

EX PARTE: Federal-State Joint Board on Universal Service
CC Docket No. 96-45

Dear Mr. Caton:

On October 8, 1996, representatives of GTE Service Corporation met with the Honorable Laska Schoenfelder, Joint Board Commissioner and Chairman of the South Dakota Public Utilities Commission, and her staff member Charles Bolle to discuss GTE's proposed auction mechanism for determining universal service support in the captioned docket. GTE used the attached materials in its presentation.

Please call me if you have any questions regarding this matter.

Sincerely,

Charon J. Harris

Attachment
cc: Federal State Joint Board Commissioners and Staff
J. Morabito

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List A B C D E

JOINT BOARD

UNIVERSAL SERVICE BRIEFING

GTE

GTE Corporation
October 1996

THE REGULATORY TRILOGY

▼ KEY MESSAGES ▼

A. Overall

- Unique opportunity: State and federal regulators have a unique opportunity to create the rules of telecom competition. Each of the major dockets in the "regulatory trilogy" -- interconnection, universal service, access reform -- must be addressed in its turn, without creating additional problems or revenue shortfalls to be resolved in the other proceedings. Regulators must proceed prudently with each proceeding; once they break open the egg of competition, unscrambling the result will be impossible.

B. Interconnection

- Unreasonable pricing standards: The FCC's interconnection order will diminish LECs' revenues that have helped support universal service. The FCC's unreasonably low pricing standard for unbundled network elements and high standard for wholesale discounts have not only eliminated any implicit support for universal service, but also have mortally weakened LECs' ability to compete. This has unnecessarily increased the problem that a new universal service fund is supposed to address. Unless the order is corrected to allow more reasonable pricing, the Joint Board's proposal will have to address the order's "gift" of LECs' assets to interexchange carriers, in addition to the needs of universal service.

- Undermining facilities-based competition: Consumers will not experience robust and widespread competition through alternate networks, since few competitors will be economically motivated to build them under the FCC's rules. (This will be even truer if universal service funding is inadequate.) By requiring LECs to sell parts of their networks to competitors at below-cost rates, the FCC's pricing rules make it cheaper for competitors to feed off of a LEC's network, rather than to construct their own facilities. This is parasitic competition, not real competition.

- Reduced customer choice: Consumers will be deprived of a major choice in retail local exchange services, since the FCC's rules relegate LECs to the role of wholesale operators. Competition will be muted given the LECs' inability to engage as robust competitors; they no longer can differentiate themselves from other entrants. Regulation, not market forces, will be determining customer choices.

- Continuing competition: A stay of the FCC's order will not delay the introduction of competition in the local market, since negotiations and arbitrations are proceeding, as contemplated by the Telecom Act.

- Exceeding statutory authority: The FCC has exceeded its authority under the Act in undermining the role of those who are closest to consumers — state commissions and carriers — in introducing local competition.

[redacted]

- Universal service goals: The goals of a universal service plan should be to ensure affordable, quality service in high-cost areas and to achieve rational pricing by transforming implicit support in current prices into explicit universal service funding. Support should be based on actual costs, not hypothetical, understated costs. Regulators should not succumb to political expedience in adopting a plan that only focuses on minimizing the size of a universal service fund. A universal service plan must be sufficient to attract continued telecom investment in high-cost communities.

- Comprehensive plan: To ensure the delivery of universal service to consumers, the Joint Board should recommend, and the FCC should adopt, a comprehensive universal service plan that addresses both interstate and intrastate aspects.

- Affordability: The federal plan should work together with state plans to ensure that the price consumers pay meets a national affordability objective. To maintain this price in a competitive market, it should establish a realistic compensation mechanism for Carriers of Last Resort (COLRs) that provide universal service.

- Price signals for competition: Universal service policy will set the price carriers see when they provide basic local service — the sum of the affordable price and the support. This must be set at the right level to send the correct price signals for market entry and investment in new technology.

- Funding: Funding should be through a competitively neutral end-user surcharge on all telecom retail services.

- Auction benefits: Once the initial cost-based funding level is determined, a competitive bidding process should be used to designate COLRs and determine support levels. This would replace the current debate over universal service cost with a market mechanism. Auctions would provide a means for correcting any errors in the initial cost-based support levels, and would adjust automatically over time to changes in cost, or in the basic service definition.

- COLR obligations: To ensure that all customers are served, support must be tied to a service obligation. But, unless all COLRs face the same obligations, competition will not coexist with a sustainable universal service plan. Consumers will be more likely to have a choice among service providers in high-cost areas if support is available to any carrier willing to undertake COLR responsibilities and successful in securing COLR status in an auction.

- Statutory consistency: The FCC and the states have the requisite authority under the Telecom Act to adopt and implement the provisions of GTE's universal service proposal.

II. Access Reform

- Rational pricing benefits: Consumers would benefit from a rational, economically efficient, uniform pricing structure for access charges, unbundled elements, resale, and local service. For example, the sum of prices for unbundled elements should reasonably resemble their bundled service equivalents. With such a pricing structure, competitors would receive correct price signals for market entry and for "make/buy" decisions, and help prevent "rate shopping."

- Linkage to universal service: Removing implicit support in existing access rates and transforming them into explicit support as required by the Telecom Act would help ensure continued delivery of universal service to consumers.

- Need for flexibility: Consumer needs would be better met if LECs have the same flexibility in pricing and packaging of access services as competing providers; and there no longer would be any justification for prescriptive access rules.

Impact of the Interconnection Order on GTE

This analysis reflects GTE's local and access service business as if it were being sold at the FCC's proxy prices specified in the order. It demonstrates the extreme wholesale discount when using proxy prices for the sale of network elements. This analysis excludes toll revenue, even though it will be indirectly impacted by unbundling, with reductions in contributions that currently support universal service. This is not a forecast of revenue losses or market share.

A. Nationwide (28 states)

Annual Revenues	Current	FCC Lower Limit	FCC Upper Limit
Local service (inc. SLC)	*3,910,803,000	3,218,877,000	3,385,886,000
Interstate access	592,671,000	105,314,000	188,530,000
Intrastate access	796,180,000	120,756,000	217,229,000
CMRS access	80,000,000	26,000,000	26,000,000
CCL/RIC (inter/intrastate)	1,827,113,000	0	0
Total	$7,206,767,000	$3,470,947,000	$3,817,645,000

B. Florida

Annual Revenues	Current	FCC Lower Limit	FCC Upper Limit
Local services (inc. SLC)	*456,752,000	365,575,000	385,491,000
Interstate access	67,566,000	13,291,000	24,981,000
Intrastate access	45,741,000	6,406,000	12,040,000
CMRS access	11,266,000	3,661,000	3,661,000
CCL/RIC (inter/intrastate)	234,180,000	0	0
Total	$815,505,000	$388,933,000	$426,173,000

C. Missouri

Annual Revenues	Current	FCC Lower Limit	FCC Upper Limit
Local services (inc. SLC)	*59,782,000	96,734,000	100,712,000
Interstate access	15,956,000	2,779,000	4,795,000
Intrastate access	34,332,000	3,353,000	5,785,000
CMRS access	1,028,000	334,000	334,000
CCL/RIC (inter/intrastate)	82,486,000	0	0
Total	$193,584,000	$103,200,000	$111,626,000

D. Washington

Annual Revenues	Current	FCC Lower Limit	FCC Upper Limit
Local services (inc. SLC)	*175,623,000	133,552,000	140,832,000
Interstate access	34,522,000	4,977,000	9,079,000
Intrastate access	28,235,000	4,326,000	7,886,000
CMRS access	3,827,000	1,243,000	1,243,000
CCL/RIC (inter/intrastate)	81,501,000	0	0
Total	$323,708,000	$144,098,000	159,040,000$

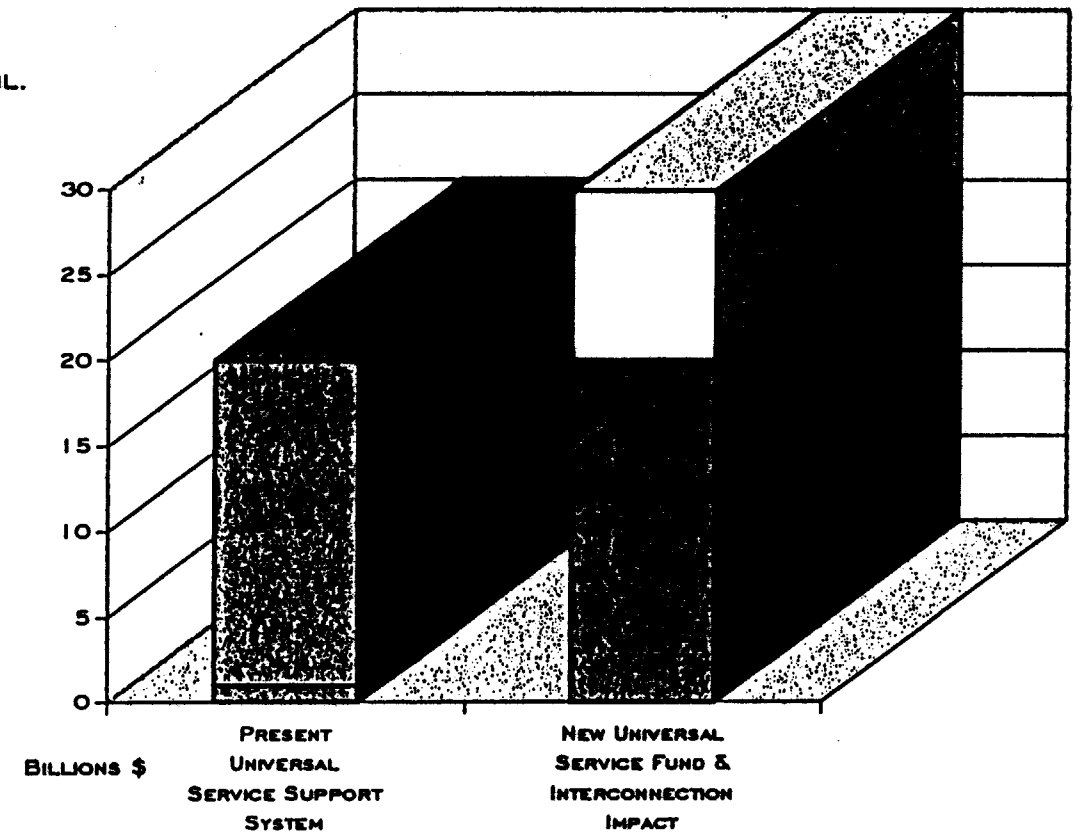
Adjusted for avoided costs of 17% specified by FCC

Interconnection order increases amount of funds needed to support universal service

PRESENT SYSTEM

EXPLICIT SUPPORT:
- HIGH-COST - $753 MIL.
- LIFELINE - $148 MIL.
- LINKUP - $19 MIL.

IMPLICIT SUPPORT:
(IN RATE STRUCTURE)
- $11-19 BIL.



NEW FUND

EXPLICIT SUPPORT:
- $12-20 BIL.

IMPLICIT SUPPORT:
- NONE

"GIFT" TO IXCs:
(INTERCONNECTION ORDER)
- $10 BIL.

UNIVERSAL SERVICE
GTE PROPOSAL
October 1996

Key Element	Policy Objective	Present System	GTE Proposal
1. What is universal service?	• Provide affordable access to telecom services in all regions of the nation	• Voice grade access to public network • White page listing • Access to operator and directory assist. • Access to 911/E911	• Present service plus single party line and touch tone
2. How will universal service be funded?	• Develop specific, predictable, sufficient and competively-neutral funding mechanism that charges all telecom carriers	• Explicit charge to IXCs for USF • Implicit support in LEC rates (access, toll, business, vertical services)	• Surcharge on all retail telecom services (state and interstate) for new universal service fund
3. Who is eligible to compete for universal service support?	• Maximize competition by giving more carriers an opportunity to provide universal service	• Incumbent LECs	• Any carrier certified by state to be eligible to bid ("fitness" reqrmnt.) and receive support if successful
4. How will carriers be selected to receive support?	• Develop competitively neutral process to select universal service providers	• Incumbent LECs in own serving area	• Incumbent LECs initially; carriers then will bid for amount of support needed to provide universal service
5. What are the obligations of COLRs?	• Ensure that all consumers in high-cost areas have affordable service	• Incumbent LECs must provide service to customers in service areas	• COLRs must be prepared to provide defined service package to any customer in bidding area for 3 years
6. What area would be the basis for receiving support?	• Target support to areas that are most in need	• Existing study area (frozen as of 11/15/84); USF based on study area average costs	• Census block group (CBG) cost estimates allow targeting of support
7. What are the relevant costs of providing universal service?	• Align support levels with true costs	• Average total costs of subscriber loops	• Use cost model to allocate actual costs among CBGs within study area
8. How will low-income consumers afford universal service?	• Ensure that all consumers have universal service	• Lifeline and Link Up America programs	• Credit to offset consumer's bill (portable among COLR and non-COLR carriers)

GTE Universal Service Proposal

Auction Process

- CLEC petitions state to hold auction for selected CBG(s)
- State qualifies bidders
- State holds auctions twice yearly
- State establishes maximum support rate
- Carriers within certain percent of lowest bid become COLRs
- Highest winning bid determines level of support for COLRs
- Winners have COLR obligations for set period (3-5 years)

Census Block Groups (CBGs)

"A" High cost	"B" High cost
"C" Med. cost	"D" Low cost

Support Mechanism

- Market forces bid down amount of support over time

Support Threshold
(set by FCC w/Joint Board input)

Affordability Threshold
(set by FCC w/Joint Board input)

Local Rate
(set by State)

- States rebalance local rates or continue funding up to Affordability Threshold

CBG "A" (high cost)
- Federal fund to Support Threshold
- Federal & State funds to Affordability Threshold

CBG "B" (high cost)
- Federal & State funds to Affordability Threshold

CBG "C" (med. cost)
- State fund to Local Rate

CBG "D" (low cost)
- No support required

- Two thresholds give FCC/States greater control over size & distribution of funds
- Actual costs distributed among CBGs help assure "explicit and sufficient" universal service support

THE WALL STREET JOURNAL WEDNESDAY, OCTOBER 2, 1996

How Bureaucrats Rewrite Laws

By John J. DiIulio Jr.

As the historic 104th Congress draws to a close, scholars have already begun to debate its legislative record. Some stress that the first Republican Congress in four decades enacted fewer major laws than any Congress since the end of World War II. Others respond that it was only natural that a new conservative Congress committed to restraining the post-New Deal rise of national government activism would pass fewer big-government bills. Likewise, while some interpret President Clinton's bright re-election prospects as a negative referendum on the GOP-led House and Senate, others focus on how Republicans ended up setting the agenda on everything from balancing the budget to welfare reform.

For at least two reasons, however, both sides in this early war over the 104th's history are firing intellectual blanks. One reason is that it is not yet clear how much of the legislation will stick politically. For example, Mr. Clinton has made plain that, if reelected, he plans to "fix" the new welfare law. And should the House fall to the Democrats, ultraliberal committee chairmen will move quickly to undo much of what the Republicans did legislatively on welfare, crime, immigration and more.

The other and more fundamental reason is that, no matter what happens in November, it is by no means certain that the laws passed by the Republican Congress over the last two years will survive administratively.

Bureaucratic Wars

Victories won on the legislative battlefield are routinely lost in the fog of bureaucratic wars over what the laws mean and how best to implement them. One of many recent examples is how the Federal Communications Commission has already virtually rewritten the Telecommunications Act of 1996.

On Feb. 8, President Clinton signed the first major rewrite of telecommunications law in 62 years. To many observers, the act represented the culmination of a series of political and judicial decisions that began in 1974 when the U.S. Justice Department filed an antitrust suit against AT&T, leading to a breakup of the old telephone monopoly and the creation in 1984 of the seven regional "Baby Bells." The bill-signing ceremony, the first ever held at the Library of Congress, was draped in symbolism. The president signed the bill with a digital pen that put his signature on the Internet. On a TV screen, comedian Lily Tomlin played her classic telephone company operator Ernestine, opening her skit with "one gigabyte" instead of "one ringie-dingie."

During the debate over the bill and for weeks after its enactment, the press played up the law's social-policy side-shows, like the requirement that most new television sets contain a "V-chip" enabling parents to lock out programs deemed inappropriate for children. But its true significance lay in removing barriers to competition in the telecommunications industry, and devolving responsibility for remaining regulation to the states. While its language is often technical, you need not be a telecom junkie to understand the letter of the law or the record of floor debates in Congress.

The FCC's rushed, revanchist rewrite of the telecommunications law is based on a hypothetical pricing scheme that only an armchair economist could love.

For example, Sections 251 and 252 of the law promote competition in local telephone markets, expressly giving state commissions authority to decide, via a strictly localized, case-specific process, what constitutes "just and reasonable" rates. It affords the FCC no role whatsoever in setting local exchange prices: "Nothing in this chapter shall be construed to apply or to give the Commission jurisdiction with respect to . . . charges, classifications, practices, facilities, or regulations for or in connection with intrastate communication service."

The law's devolutionary language and deregulatory intent was so clear that groups such as the National Council of Governors' Advisors quickly produced reports advising key state and local decision makers to prepare for "telewars in the states." Soon, one NCGA report on the law explained, "governors' offices, state legislatures and state public utility commissioners will be drawn into state debates on how to ensure a 'level playing field for competition' among those firms seeking to provide local and intrastate telephone service." The major battles, the NCGA predicted, would be over the terms of price and interconnection agreements. Telephone company rivals could be expected to lobby governors, utility commissions and state legislatures in search of allies.

But within six months of the law's enactment, the FCC declared a victor in the "telewars in the states"—namely, itself. The commission produced a 600-page document promulgating presumptive national pricing standards in local telephone markets. The FCC insists that the order is necessary to pry open local markets to long-distance carriers like AT&T, small firms like Teleport, and cable and wireless companies. Otherwise, the commission asserts, incumbent local carriers like the Regional Bell Operating Companies will remain invulnerable to real competition as potential entrants to intrastate markets are forced to contend with 50 different, localized state regulatory regimes.

But the FCC's rushed, revanchist rewrite of the telecommunications law is based on a hypothetical pricing scheme that only an armchair economist could love. In its hundreds of pages of national regulatory dictates, the FCC almost completely ignores the actual costs that local companies incurred to create the system, and the regional and other variations in how they operate.

On Aug. 28, GTE Corp. and Southern New England Telecommunications Corp. challenged the FCC in court, arguing that the FCC's order constitutes an uncompensated taking under the Fifth Amendment by requiring them to sell their services at below actual costs. The order, they claim, would almost certainly enervate competition by permitting long-distance giants like AT&T to buy up local phone networks at huge discounts—an ironic potential outcome indeed given how all this began in 1974. Moreover, not only giants like AT&T but fly-by-night arbitrage artists could enrich themselves at the expense of consumers on the spread between actual operating costs and the prices set by the FCC. In response to the suit, a federal appeals court ordered a temporary stay of the FCC regulations and will hear oral arguments in the case tomorrow.

At a recent press conference, GTE's senior vice president and general counsel, former U.S. Attorney General William P. Barr, demanded to know why the FCC believes that it is better at making decisions "for 50 states than the state commissions are, who have done this historically, who have all the data that are relevant to the state before them."

A Mockery

But whether or not the FCC is wiser than the states, and regardless of who is right about the economics of the case, the FCC bureaucrats' order mocks key provisions of a democratically enacted law. The FCC's action is at odds not only with the textbook understanding of "how a bill becomes law," but with the first principles of limited government and American constitutionalism.

The FCC's action should serve to remind us that the devolution and deregulation of federal authority are always in the administrative details. On telecommunications, welfare, and almost every other major issue, big government is the administrative state in which judges and unelected officials, and not the elected representatives who debate and enact the laws, govern us all.

Mr. DiIulio is professor of politics and public affairs at Princeton, director of the Brookings Center for Public Management and adjunct fellow at the Manhattan Insti-

FUNDS TO SCHOOLS

Implementing the Snowe-Rockefeller-Exxon-Kerry Amendment

▸ *Requirement*

Section 254(h) of the Telecommunications Act of 1996 requires the provision of telecommunications services at rates that are deemed affordable to schools, libraries and health care providers. The Act also calls for a specific, predictable and sufficient fund to reimburse carriers. The Act does not specify a mechanism for implementation.

▸ *Recommended Plan*

To meet the requirements of sufficient and predictable, the industry initially recommended a "funds to schools" approach that would provide vouchers to schools that could be used to obtain free services from any telecommunications service provider. Recommended establishing fund of about $1 billion a year from which vouchers are distributed, and would place constraint on amount of free services that schools may obtain at about $10,000-12,000 per year (125,000 schools at $10K equals $1.25 billion annual fund). Schools in rural and low income areas would receive additional funding above $10K limit to ensure equity and prevent situation of "haves and have nots." Concern is that without some constraints (i.e., if schools could obtain free services and there are no limits on the services they can obtain), cost to be borne by consumers could far exceed $1 billion per year, and industry could not accurately predict a fund level that would be sufficient and predictable.

Because of concerns expressed by education community with voucher plan, the industry has proposed an alternative plan based on a sliding discount. Under that plan, services would be offered at 30-70% discounts with a ceiling on benefits of $12,000 per school per year, and discounts halved to 15-35% on additional services up to $25,000. Discounts would not apply for services beyond $25,000 except in extreme cases. To ensure rates are affordable for schools in rural and high cost areas where tariff rates may be very high, discounts would apply to benchmark prices in lieu of actual rates, and LECs could receive reimbursement based on the difference between tariff rates and the benchmark price. To ensure that benefits accrue to those schools not yet connected to the information infrastructure, rather than to schools that can afford and have already been connected, the sliding discount would be phased in over five years for *existing* services (the full discount, with a ceiling on the benefits to be received, would apply to all new services).

▸ *Eligible Services*

Flexibility is important. Rules should not mandate deployment of specific technology or services. Specifying a particular technology or services might conflict with what schools already have, or with existing state plans. Schools are at different stages of technology deployment and have different needs, and therefor should be able to choose from any commercially available regulated services.

▸ *Inside Wiring*

Question of whether FCC has jurisdictional authority to require LECs to wire classrooms, since inside wire is not a regulated telecommunications service. As a practical matter, few LECs are any longer involved in the inside wire business. Cost of providing connections to every classroom would greatly escalate size of Universal Service Fund (about 125,000 eligible schools times industry estimate of $50,000-100,000 per school equals $6-12 billion just to wire classrooms).

▸ *Use of TELRIC in Determining USF Reimbursement*

Inappropriate and probably unlawful to use imputed costs (i.e., benchmark cost model) to determine basis for reimbursement from Universal Service Fund. Difference between tariff rate and rate for schools should be basis for reimbursement. Any shortfall in recovery (i.e., if fund is not "sufficient and predictable") might fall upon states. Also, use of TELRIC as basis for reimbusement would create administrative nightmare, with all providers having to perform cost studies and file tariffs for services in every jurisdiction in order to be competitively neutral.

▸ *Libraries and Rural Health Care Providers*

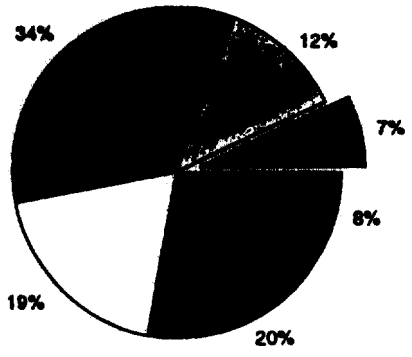
Have similar needs and require similar plans to schools. Approximately 15,000 libraries in nation; estimate they would increase necessary fund size about 10% over what is required for schools. No estimates available for health care providers.

▸ *KickStart Initiative*

The attached pages show the estimated cost of deploying and operating a computer infrastructure in the nation's public schools under two different scenarios. A study performed in 1995 by the United States Advisory Council on the National Information Infrastructure shows that connecting schools to the public switched network is but one of many costs of equipping schools with computer technology. Depending on the "model" chosen for technology deployment, the cost of connecting schools would be between $770 million and $1.88 billion for initial deployment, and $600-980 million a year for annual operating costs, *not* including connections and linkages (i.e., inside wiring) within the school.

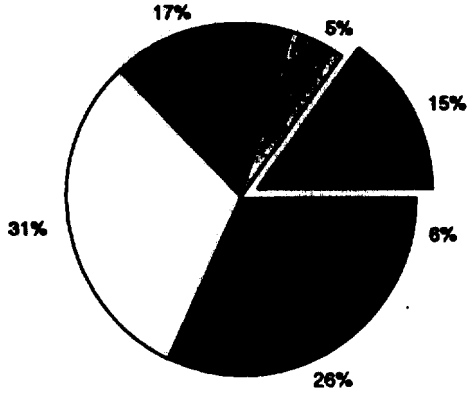
Cost of Deploying and Operating Computer Infrastructure
K-12 Public Schools - "Laboratory Model"

Initial Deployment Costs - $11 Billion



- 7% - Connection to School
- 12% - Connections and Linkages within School
- 34% - Hardware, Software and Retrofitting
- 19% - Professional Development and Support
- 20% - Content and Subscription Charges
- 8% - Systems Operation and Maintenance

Annual Operating Costs - $4 Billion



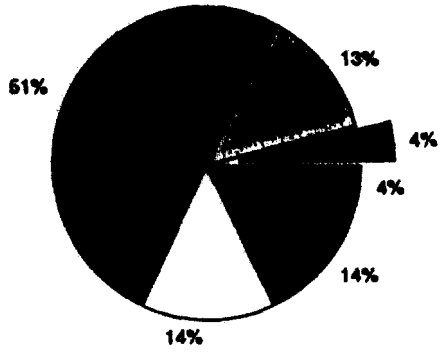
- 15% - Connection to School
- 5% - Connections and Linkages within School
- 17% - Hardware, Software and Retrofitting
- 31% - Professional Development and Support
- 26% - Content and Subscription Charges
- 6% - Systems Operation and Maintenance

Single laboratory room in each school with 25 computers; ethernet LAN in laboratory; 10 telephone lines. Deployment accomplished over 5 years.

Source: KickStart Initiative; Connecting America's Communities to the Information Superhighway. United States Advisory Council on the National Information Infrastructure; 1995.

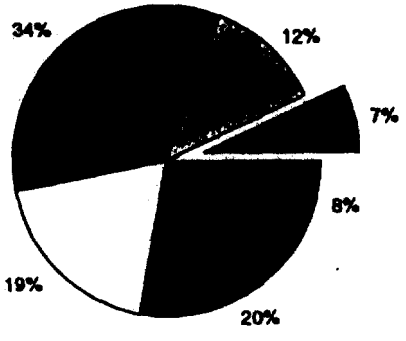
Cost of Deploying and Operating Computer Infrastructure
K-12 Public Schools - "Classroom Model"

Initial Deployment Costs - $47 Billion



- 4% - Connection to School
- 13% - Connections and Linkages within School
- 51% - Hardware, Software and Retrofitting
- 14% - Professional Development and Support
- 14% - Content and Subscription Charges
- 4% - Systems Operation and Maintenance

Annual Operating Costs - $14 Billion



- 7% - Connection to School
- 12% - Connections and Linkages within School
- 34% - Hardware, Software and Retrofitting
- 19% - Professional Development and Support
- 20% - Content and Subscription Charges
- 8% - Systems Operation and Maintenance

All classrooms have 1 computer per 5 students; ethernet LAN connecting all classrooms; T-1 connection. Deployment accomplished over 10 years.

Source: KickStart Initiative; Connecting America's Communities to the Information Superhighway. United States Advisory Council on the National Information Infrastructure; 1995.

Statement of Paul R. Milgrom

Attached to GTE's Comments in Response to Questions
CC Docket 96-45

I. Introduction

This statement presents a proposal to conduct a series of auctions to identify which firms should assume universal service obligations in each geographic area of the country and at what support level. A properly designed auction mechanism is a relatively quick, objective and straightforward market process that replaces more elaborate, subjective and opaque regulatory processes to determine the "who" and "at what price" of universal service support. What I suggest below is a flexible plan to implement auctions over time in those areas where circumstances permit their use.

As will be apparent from the discussion below, the Commission confronts a number of trade-offs in designing an auction. The comment period in the Commission's Notice is not sufficient for me to recommend to the Commission the optimal way of making those tradeoffs. For that reason, this statement should be considered an outline describing some of the main features that should be included in a COLR auction, rather than as a final, fixed proposal.

When there are two or more potential carriers of last resort (COLRs), auctions have several important advantages over industry cost models as a means of determining the support payments for meeting universal service obligations. First, an auction uses an actual market process to set support levels. That is desirable not only to avoid the controversies that inevitably accompany cost modeling and estimation but also because even the best cost models are both biased and incomplete as a basis for

setting support levels. Support payments based on cost models overestimate the actual level of support needed to attract a COLR when the LEC technology and facilities locations on which the models are based are not the least cost way to meet the COLR obligation. Also, when the LEC technology *is* the cheapest way to meet COLR obligations but competition in the provision of services is desired, support payments based on LEC costs may be too low to attract and sustain the desired competition, or perhaps any competition at all. Further, it is reasonable to assume that the firms' actual bids will be based on even more detailed cost estimates than could be reflected in an industry cost model and will be reduced to reflect the profit opportunities on any incidental or complementary services that the firm expects to sell along with basic services. No model that the Commission could plausibly implement would include so many factors or be based on such detailed cost analysis as the bids in an auction.

A second advantage is that auctions can determine how many COLRs should be supported and who they should be. Competition among potential COLRs can be of two kinds: "competition in the market" – in which several carriers accept COLR obligations and compete to acquire subscribers and the associated support payments – or "competition for the market" – in which companies bid for the right to serve as the exclusive COLR (or as one of a limited number of COLRs). "Competition in the market" is likely to lead to more innovative and responsive service to consumers and to reduce the severity of "hold up" problems that come from reliance on a single supplier. However, competition in the market can also result in duplicated facilities costs and burdensome support payments that necessitate imposing surcharges on other communications services. Competition "for the market" in a traditional auction can lead

to lower support payments as the bidders vie aggressively for the exclusive (or at least limited) right to serve as a COLR, reducing the burden on other services. Auctioning a fixed number of COLR designations would require the FCC to determine the fixed numbers: it must decide how many COLRs to authorize in each area. That determination would be a difficult and costly one for any regulator to make well because it would require extensive and reliable cost information and, possibly, market and technology forecasts.[1] By contrast, my proposal permits the number of COLRs to be an outcome of the auction itself, as auction participants place bids based on what will be inherently better cost information and on what they believe is the best information on future market and technological developments.

Third, by establishing actual market prices for universal service in the various service areas, the auction provides useful information to potential entrants. Market prices are useful for determining which markets may be ripe for entry and what cost targets need to be reached to make entry profitable in these markets. COLR auctions would also be likely to generate statistical information about service costs that the FCC might find useful in other proceedings and at other dates. For example, the FCC might use the auction results in markets with substantial competition to assess standards for LECs in regions where there is no competition.

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[1] I note that the recent Telecommunications Act appears to be largely premised on the presumption that the benefits of promoting entry will usually outweigh the costs, but the extent of entry will still vary among service areas and the auction design needs to be cognizant of that.

Another important advantage arises when service areas are re-auctioned over time, as I propose. A series of auctions allows the support payments to respond to changing technologies, population densities, and other factors. Probably, there will initially be some geographic areas in which only a single COLR operates but for which changing circumstances will eventually make competition among multiple COLRs feasible and desirable or in which reduced costs call for reduced support payments. The auction system can respond flexibly to changing circumstances, allowing entry to occur when the time is ripe and encouraging support payments to fall in tandem with the falling costs of service.

The auction proposal developed here calls for sealed tender auctions that would allow multiple COLRs to be selected if the several lowest bids are close enough together. The support levels would be the same for each COLR serving an area and would be set equal to the highest accepted bid.

This is a novel auction design, constructed to meet the novel challenges posed by the universal service context. While the FCC's simultaneous multiple round auctions have proved themselves to be effective for the spectrum sales with fixed numbers of licenses, I shall argue that such a design is less well suited to determine the extent of competition that should prevail among COLRs in each market area.

Section II of this statement examines theoretical considerations that apply in designing an auction to determine the amount of support and the level of competition simultaneously. Section III contains a specific proposal and a discussion of both the basic auction design and related practical details.

It is important to set realistic expectations about what a good auction design can and cannot achieve. Most importantly, auctions cannot resolve all the problems that may arise when there is a single facilities based universal service provider. If a single COLR with large sunk costs is the inevitable practical outcome in any particular geographic region, no auction, however cleverly it may be designed, can substitute for effective continuing regulation of the monopoly COLR.[2]

Second, an auction system cannot be effective unless the bidders have something to win. If one allows providers other than auction winners to provide basic service with support from the universal service fund, then that eliminates the bidders' incentives to bid for a low support levels,[3] leading to undesirable increases in the surcharge needed to fund universal service.

II. Principles of Auction Design for COLR Obligations

The COLR auction design problem is characterized by a number of special features that distinguish it from other government auction design problems. First, in contrast to the spectrum auctions, the market structure in a universal service auction

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[2] If an exclusive franchise is efficient but large sunk costs are not required, then there can be effective "competition for the market" each time the franchise is available for auction.

[3] An auction could conceivably be designed in which the winner receives a cash bonus but no advantage in the subsequent market competition. However, our analysis in section II implies that such a scheme is never optimal.

would vary from area to area, as determined by the auction results.[4] Consequently, the number of COLRs and the amount of support must be considered together in evaluating the performance of the auction. Second, to promote efficient competition among COLRs, it is desirable that the level of support in any area be the same for all COLRs. A "discriminatory" auction in which different bidders receive different levels of support, though useful in other settings, is to be avoided because such discrimination would distort subsequent market competition among COLRs.[5] Third, if the proposals to use very small, homogeneous service areas are adopted, then the number of universal service areas is likely to be very large, making the administration of a complicated auction potentially quite costly for both the FCC and the bidders. Fourth, there is enormous uncertainty about the initial level of interest in the various COLR service areas, making it important to design an auction that discourages collusion in case the number of interested bidders in many areas is just two. Finally, because the bidders are undertaking an obligation in exchange for a payment (in contrast to making payments to acquire licenses in the FCC's spectrum auctions), more attention must be paid to ensuring that bidders are qualified and motivated to perform as promised in the auction.

The mathematical analysis of this section accounts explicitly only for the first of these differences, but the way the mathematical results are applied takes some account

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[4] In the PCS auctions, the market structure was determined primarily by restrictions on the amount of spectrum that individual licensees are permitted to control. These restrictions were the same for all areas of the country.

[5] The US Treasury uses a discriminatory auction to sell T-bills, but the individualized prices in that auction do not distort subsequent competition because the bids become sunk costs before the buyers engage in resale.

of the second, third and fourth differences as well.[6] That is, we seek an auction design that is simple for the bidders and the administrators, that generates uniform levels of support for all COLRs in a market area, and that is resistant to collusion while still taking proper account of the benefits arising from competition after the auction among COLRs in the market.

To derive principles to guide the design of an auction for carrier of last resort obligations, I first consider a scenario in which there is just one region in which universal service needs support. The main problem in this scenario is to use the bids to determine how many COLRs there should be and what level of support to pay. The principal qualitative finding of the analysis is that the auction outcome should specify that the COLR obligation is shared only when the bidders' service costs are sufficiently close. This may be reflected by sufficiently close bids in a sealed bid auction. Of course, the detailed quantitative conclusions of the analysis, including how many COLRs to authorize for any particular cost or bid levels, depend on the detailed assumptions of the model, but the general conclusion reported here is sufficient to help us distinguish some poor auction designs from more desirable ones. For example, I find that multiple round auctions such as those used for the PCS auctions, even in the trivial case where there is just one COLR service area for sale, cannot generally implement the optimal

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[6] The last difference is a matter to be solved primarily by pre-qualification of the bidders and by specifying that the support payments are made on a per subscriber basis rather than by lump sums (at least when there is competition in the market). It is not a matter to be resolved directly through the auction design.

auction outcomes, but that certain sealed bid auctions can implement the optimal outcomes.

The theoretical analysis cannot specify how many COLRs should be assigned in any particular situation, but it can identify the relevant considerations. Generally, the number of COLRs should depend on the gains to increased competition in the ensuing market, the magnitude of the duplicated fixed costs (greater duplication favors fewer COLRs), the differences between the COLRs in the levels of their variable costs (smaller differences favor more COLRs), and the social loss associated with paying unnecessarily high support payments (larger losses favor fewer COLRs).

An Optimal Auction

I begin by assuming that there is just one region for which universal service must be provided (or where there are multiple regions but each is independent so that a commitment to serve one does not affect the cost of service in any other). The main problem is to use the bids to determine how many COLRs there should be and what support levels should be paid. Alternative auction designs are compared in this exercise in terms of a social objective which balances the desires (i) to encourage competition "in the market" in order to promote better and more innovative service to consumers, (ii) to have service provided by the providers for whom the actual cost of service is lowest, and (iii) to hold down the support levels that must be paid, since financing those supports distorts other economic decisions. The constraints in the problem are that the bidders are assumed to behave rationally, entering the auction only if they expect to

profit by doing so (the "*participation constraint*") and bidding to maximize their individual expected earnings given the strategies of the other bidders (the "*incentive constraint*").[7]

I make the simplifying assumption that the fixed costs of service are the same across bidders.[8] Also, at this stage, I assume that at least one COLR must be selected for each area.[9] The solution to this problem can be characterized using the methods of optimal auction theory.[10]

The optimal auction problem is to choose the rules and the behavior of the bidders, subject to the constraints described above, to maximize the following three-term objective:

Expected Benefits to Consumers

– Expected Costs Incurred by the COLRs

– α×Expected Support Payments to COLRs

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[7] That is, the strategies are assumed to form a Nash equilibrium of the auction game.

[8] This is not an assumption I make happily. I make it because it makes the analysis tractable and leads to intuitively sensible results. Also, the auction obtained from the analysis has at least some robustness: identical recommendations are obtained when the ratio of fixed to variable costs are the same across bidders.

[9] This assumption sets aside the question of reserves, i.e., maximum opening bids. As we shall see later, the franchises offered for auction are determined by a nomination process with a workable reserve determined as part of that process.

[10] Myerson, Roger, "Optimal Auction Design," *Mathematics of Operations Research* 6 (1981): 58-73.

where α is a parameter indicating the costs of distortions created by the support payments to the COLRs.[11] The benefit to consumers is assumed to be B_1 if there is just one COLR; B_1+B_2 if there are two COLRs, and so on, with B_n denoting the incremental benefit of introducing an n^{th} COLR to compete in providing universal service.

The analysis characterizes the optimal auction in terms of the outcomes that ensue. To avoid technical problems, we limit our analysis here to what the modern economic auction theory literature calls the "regular case."

Then, an auction design that always selects at least one winner is optimal if and only if its outcomes have these two characteristics: (1) bidders with sufficiently high costs cannot expect to profit from participating in the auction and (2) for any profile of actual costs, the set of bidders selected to be COLRs maximizes the expected benefits to consumers minus the expected costs incurred, minus α times a "*virtual cost*" (which is a theoretical construct consisting of the actual cost adjusted upwards to account for bidding incentives). If the bidders are otherwise symmetric, multiple COLRs are most likely when the low cost bidders' cost levels are close together.

One immediate implication of this characterization is that multiple round auctions, which the FCC has used successfully in other contexts, are not well adapted to this context. To see why, consider the simplest case with just two bidders. An efficient multiple round auction would then need to specify that a support payment near the

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[11] More exactly, the distortion is created by the surcharge or tax used to finance the subsidy.

reserve is paid to both bidders if the auction ends immediately after opening bids near the reserve. With such rules, it is often consistent with rational behavior by both bidders for neither to lower the bid below the reserve even if the two bidders' costs are very different and much lower than the reserve.[12] In plain English, a multiple round auction that tries to implement the efficient outcome rule is exceptionally vulnerable to both explicit and implicit collusion. Such collusion is undesirable because it would be likely to result in unnecessarily high support payments and the inclusion of inefficient COLRs among the winning bidders.

An auction design that does encourage efficient outcomes in case there are just two bidders is the sealed tender auction in which two COLRs are assigned if the second lowest bid is close enough to the lowest bid. The support payment may be set equal to the highest accepted bid (although, as we shall see later, other payment rules are also permitted by the theory). An important advantage of the proposed sealed tender auction compared to the multiple round design is that it creates a powerful incentive for each bidder to defect from any pre-auction collusive agreement by undercutting its rival's bid in order to acquire the exclusive right to receive support payments for COLR services.

This analysis implies that an auction can be used to encourage competition both *for the market* and *in the market* even when there are only two bidders. Of course, the idea can also be extended to apply when there are more than two bidders. For a simple

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[12] That is, strategies incorporating this behavior may comprise a Nash equilibrium.

(though unrealistic) example, suppose $B_2=B_3=...$ (meaning that the incremental benefit of additional competitors is the same for each extra competitor). Let us assume for the cost calculation that the COLRs would share the market equally. Then, in the optimal auction, the n^{th} lowest bidder should be included as a COLR only if the *n–1* lower bidders are included and the cost of the n^{th} lowest bidder does not exceed the average of the costs of the *n–1* lower bidders by more than a specified amount *c*.[13] In the interests of simplicity, one might use an "approximation" of this outcome rule by specifying that all bidders whose bids are within some amount *c'* of the lowest bid are included.

Generally, with more than two bidders, the form of the optimal auction depends on several things, including prominently the relative magnitudes of B_2, B_3, etc. On the basis of economic theory, it is reasonable to suppose that the benefits of additional competition decline as the number of competitors increase, that is, $B_2>B_3>B_4>...$. The theoretically optimal rule in this case depends on the likely market shares of the bidders as determined by their various costs. If one assumes that the COLRs will eventually have roughly equal market shares, the optimal rule would be to include the n^{th} bidder as a COLR if its cost is not too much higher than the average of the cost of the *n-1* lower cost bidders. As a practical approximation of the actual optimal outcome rule, one might set the outcome rule in an actual auction as follows.

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[13] If the shares are not equal, the relevant comparison is between the cost of the n^{th} bidder and the weighted average cost of the *n-1* lower cost bidders, weighted according to the number of customers taken from each bidder by the n^{th} bidder.